CLAIMS

What is claimed is:

1. A semiconductor electrochemical biosensor array (SEBA), comprising:

an array of electrodes to receive sample material from an external source; and

sensor circuitry, coupled to the array of electrodes, having a plurality of sensor cells to analyze the sample material received at the array of electrodes.

2. The SEBA of claim 1 further comprising:

a decoder, coupled to the sensor circuitry, to select which of the plurality of sensor cells are to be used to analyze the sample material; and

control circuitry, coupled to the sensor circuitry to enable a SEBA user to activate a combination of electrodes and sensor cells.

3. The SEBA of claim 2 further comprising:

a function generator, coupled to the control circuitry, to generate signals for measurements; and

reference elements coupled to the sensor circuitry.

4. The SEBA of claim 1 wherein the array of electrodes comprises a plurality of triple electrode configurations each coupled to a sensor cell.

5. The SEBA of claim 4 wherein the triple electrode arrangement comprises:

a common electrode;

an active electrode; and

a passive electrode.

6. The SEBA of claim 5 wherein each of the sensor cells comprise:

an amplifier, having inputs coupled to an active electrode an a passive electrode, to provide a variable gain based upon a type of analysis being performed;

a plurality of switches coupled to the amplifier and

a control register to control the plurality of switches.

7. The SEBA of claim 6 wherein the amplifier receives one or more select bits to in order to set a gain level.

8. The SEBA of claim 6 wherein the sensor cells are configured to implement Charge Perturbation Signature (CPS) analysis.

9. The SEBA of claim 6 wherein the sensor cells are configured to implement Impedance Spectroscopy (IS) analysis.

10. The SEBA of claim 6 wherein the sensor cells are configured to implement Cyclic Voltammetry (CV) analysis.

11. The SEBA of claim 6 wherein the sensor cells are configured to implement potentiometric measurements.

12. The SEBA of claim 1 wherein the sample material is chemical samples.

13. The SEBA of claim 1 wherein the sample material is biological samples.